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PATENT **98RE024-A/ALBRP112USA**

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Date: 4/13/2006 Rebecca Stanford

Rebecca Stanford

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Applicant(s): Fred Discenzo, *et al.*

Serial No: 09/866,414

Filing Date: May 25, 2001

Examiner: Jungwon Chang

Art Unit: 2154

Title: MOTORIZED SYSTEM INTEGRATED CONTROL AND DIAGNOSTICS USING VIBRATION, PRESSURE, TEMPERATURE, SPEED, AND/OR CURRENT ANALYSIS

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Dear Sir:

Appellants' representative submits this brief in connection with an appeal of the above-identified patent application. A credit card payment form is filed concurrently herewith in connection with all fees due regarding this appeal brief. In the event any additional fees may be due and/or are not covered by the credit card, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1063 [ALBRP112USA].

I. Real Party in Interest (37 C.F.R. §41.37(c)(1)(i))

The real party in interest in the present appeal is Rockwell Automation Technologies, Inc., the assignee of the present application.

II. Related Appeals and Interferences (37 C.F.R. §41.37(c)(1)(ii))

Appellants, appellants' legal representative, and/or the assignee of the present application are not aware of any appeals or interferences which may be related to, will directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims (37 C.F.R. §41.37(c)(1)(iii))

Claims 38-40, 44, 50-52, and 56 have been cancelled. Claims 1-37, 41-43, 45-49, 53-55, and 57-59 are currently pending in the subject application and are presently under consideration. Claims 1-37, 41-43, 45-49, 53-55, and 57-59 stand rejected by the Examiner. The rejection of claims 1-37, 41-43, 45-49, 53-55, and 57-59 is being appealed.

IV. Status of Amendments (37 C.F.R. §41.37(c)(1)(iv))

Amendments were made to claims 32 and 41 to cure minor informalities associated with the indicated claims. These amendments were entered subsequent to the Final Office Action dated October 6, 2005.

V. Summary of Claimed Subject Matter (37 C.F.R. §41.37(c)(1)(v))

Independent Claim 1

Independent claim 1 recites a diagnostics and control system for controlling a motorized system and diagnosing the health thereof, comprising: a controller that conveys a control signal to a motor drive to operate the motorized system in a controlled fashion; and a diagnostics system integrated with the controller and the motor drive to comprise a single unit that diagnoses the health of the motorized system according to a measured attribute associated with the motorized system, the diagnostics system

providing a diagnostic signal to the controller. (*See e.g.*, page 13, line 21-page 18, line 3; controller 71, diagnostics system 70, motor drive 60 Fig. 2; and *see generally*, Figs. 3-6).

Independent Claim 32

Independent claim 32 recites a method of controlling a motorized system and diagnosing the health thereof, comprising: employing a motor drive to operate a motor in the motorized system in a controlled fashion; utilizing a component integrated with a controller to diagnose the health of the motorized system according to a measured attribute associated with the motorized system, the motor drive, the controller and the component integrated with the controller form a single entity; and generating a diagnostics signal communicated to the controller. (*See e.g.*, page 12, line 3-page 13, line 12; and *see generally* Fig. 1).

Independent Claim 41

Independent claim 41 recites an integrated control and diagnostics system for a motor, the system comprising: a diagnostics module to generate a health assessment signal indicative of the health of the motor; and a controller integrated with the diagnostics module and coupled to a motor drive, the controller outputting a driving output based on the health assessment signal, the driving output is applied to the motor drive, the motor drive and the controller integrated with the diagnostics module form an indivisible unit. (*See e.g.*, page 13, line 21-page 23, line 12, and *see generally* Figs. 2-6).

Independent Claim 57

Independent claim 57 recites an integrated control and diagnostics system, comprising: means for controlling a motorized system utilizing a health assessment signal indicative of the health of the motorized system. (*See e.g.*, page 13, lines 24-28). Independent claim 57 also recites means for driving a motorized system based at least in part on input from the means for controlling. (*See e.g.*, page 16, line 24-page 17, line 4). Additionally, independent claim 57 recites means for generating the health assessment signal, the means for generating integrated with the means for controlling and the means for driving to constitute a single unit. (*See e.g.*, page 13, line 21-page 15-line 28).

The means for limitations described above are identified as limitations subject to the provisions of 35 U.S.C. §112 ¶6. The structures corresponding to these limitations are identified with reference to the specification and drawings in the above-noted parentheticals.

Independent Claim 58

Independent claim 58 recites a composite control and diagnostics system to control a motor, comprising: means for effectuating movement of the motor. (*See e.g.*, page 15, lines 20-28). Independent claim 58 also recites means for controlling the means for effectuating movement in a controlled fashion based in part on a health assessment signal. (*See e.g.*, page 13, lines 21-28). Additionally, independent claim 58 recites means for formulating the health assessment signal, the means for effectuating movement, the means for controlling and the means for formulating the health assessment signal forming a single integrated unit. (*See e.g.*, page 13, line 21-page 15-line 28).

The means for limitations described above are identified as limitations subject to the provisions of 35 U.S.C. §112 ¶6. The structures corresponding to these limitations are identified with reference to the specification and drawings in the above-noted parentheticals.

Independent Claim 59

Independent claim 59 recites an integrated control and diagnostics system, comprising: means for diagnosing the health of a motorized system amalgamated to from a unitary whole with a means for controlling the motorized system and a means for driving the motorized system based in part on a control signal from the means for controlling, the means for diagnosing producing a diagnostic signal; and means for communicating the diagnostic signal to the means for controlling. (*See e.g.*, page 13, line 21-page 15-line 28).

The means for limitations described above are identified as limitations subject to the provisions of 35 U.S.C. §112 ¶6. The structures corresponding to these limitations

are identified with reference to the specification and drawings in the above-noted parentheticals.

VI. Grounds of Rejection to be Reviewed (37 C.F.R. §41.37(c)(1)(vi))

A. Claims 1-7, 10-11, 15, 31-34, 36-37, 41-43, 45-47, 49, 53-55, and 57-59 stand rejected under 35 U.S.C. §103(a) as being obvious over Hays *et al.* (US 6,260,004) in view of Grimm *et al.* (US 6,369,472).

B. Claims 8-9, 12-14, and 16-19 stand rejected under 35 U.S.C. §103(a) as being obvious over Hays *et al.* and Grimm *et al.* and further in view of Ogi *et al.* (US 5,419,197).

C. Claims 20-30 and 35 stand rejected under 35 U.S.C. §103(a) as being obvious over Hays *et al.* and Grimm *et al.* and further in view of Petsche *et al.* (US 5,640,103).

D. Claim 48 stands rejected under 35 U.S.C. §103(a) as being obvious over Hays *et al.* and Grimm *et al.* and further in view of Gotou *et al.* (US 4,933,834).

VII. Argument (37 C.F.R. §41.37(c)(1)(vii))

A. Rejection of Claims 1-7, 10-11, 15, 31-34, 36-37, 41-43, 45-47, 49, 53-55, and 57-59 Under 35 U.S.C. §103(a)

Claims 1-7, 10-11, 15, 31-34, 36-37, 41-43, 45-47, 49, 53-55, and 57-59 stand rejected under 35 U.S.C. §103(a) as being obvious over Hays *et al.* (US 6,260,004 B1) in view of Grimm *et al* (US 6,369,472 B1). This rejection should be reversed for at least the following reasons. Hays *et al.* and Grimm *et al.*, either alone or in combination, do not teach or suggest each and every aspect set forth in the subject claims.

> To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to

> one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) ***must teach or suggest all the claim limitations***. *See* MPEP §706.02(j). The ***teaching or suggestion to make the claimed combination*** and the reasonable expectation of success ***must be found in the prior art and not based on the Applicant's disclosure.*** *See In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added).

Appellants' claimed invention relates to systems and methods for controlling and diagnosing motorized systems according to vibration, pressure, temperature, speed, and/or current analysis. In particular, the claimed subject matter provides a diagnostics and control system for controlling a motorized system and diagnosing the health thereof, with a controller operatively associated with the motorized system and adapted to operate the motorized system in a controlled fashion, and a diagnostics system operatively associated with the motorized system and adapted to diagnose the health of the motorized system according to a measured attribute associated with the motorized system. To this end, independent claims 1, 32, 41 and 57-59 recite similar aspects, namely: ***a diagnostics system integrated with the controller and the motor drive to comprise a single unit.*** Neither Hays *et al.* nor Grimm *et al.*, either alone or in combination, teach or suggest these features of appellants' claimed invention.

Hays *et al.* discloses an apparatus and method for diagnosing a pump system, wherein diagnostics are utilized to determine impending failures of a pump. Hays *et al.* however does not disclose a motor drive. The Examiner in the Advisory Action dated January 13, 2006 contends that Hays *et al.* in figure 1, items 12 and 14; at col. 1, lines 45-46; col. 4, lines 5-8; and col. 6, lines 53-57 teaches the exemplary motor drive elucidated in the subject claims. Appellants' representative disagrees. The commentary associated with figure 1 states that item 12 is a motor and item 14 is a pump. Further, col. 1, lines 45-46 states that monitoring equipment, such as that provided by Bently Nevada, are appropriately mounted to rotary equipment such as turbines, compressors, fans, pumps and drive units such as motors. In addition, col. 4, lines 5-8 provides that pumps are used with constant speed power sources such as an 1800-RPM electric motor, or with a variable speed drive. Additionally, col. 6, lines 53-57 provide that a driver source is

typically an electric motor, a diesel engine or a turbine. While appellants' representative does not disagree that the cited document provides a driving source to run rotary equipment, it is nevertheless appellants' representative's contention that the cited document fails to provide a motor drive as recited in the subject claims. A motor drive as disclosed in appellants' disclosure, for example, provides electrical power to a motor. Thus, the motor drive as disclosed and recited in the subject claims can provide three-phase electric power from an AC power source to a motor via cables in a controlled fashion (*e.g.*, at a controlled frequency and amplitude) in accordance with a control signal received from a diagnostics and control system. In addition, the motor drive as disclosed and claimed can for example provide motor current, voltage, and/or torque information to the diagnostics and control system. It is thus submitted that Hays *et al.* does not provide the motor drive as recited in the subject claims, and in fact nowhere in Hays *et al.* is there mention of the utilization of a motor drive.

Further, the secondary document, Grimm *et al.* does not make up for aforementioned deficiencies with respect to Hays *et al.* Grimm *et al.* relates to a device for acquiring operating parameters of an electric motor, such as a number of motor starts and a number of operating hours to provide reliable information regarding whether the electric motor can be reused after a certain operating time or must be discarded. Nowhere in Grimm *et al.* is there a disclosure of a motor drive as recited in the claims at issue.

Consequently, in the view of the fact that both the primary and secondary are silent regarding the salient motor drive element, it is submitted that neither Hays *et al.* nor Grimm *et al.*, alone or in combination, can reasonably be viewed as providing a single unit that comprises a controller, a diagnostics system and a motor drive, wherein the controller conveys a control signal to the motor drive based on a diagnostic signal generated by the diagnostics system. Accordingly, this rejection should be reversed with respect to independent claims 1, 32, 41 and 57-59 (and claims that depend there from).

B. Rejection of Claims 8-9, 12-14, and 16-19 Under 35 U.S.C. §103(a)

Claims 8-9, 12-14 and 16-19 stand rejected under 35 U.S.C. §103(a) as being obvious over Hays *et al.* and Grimm *et al.* and further in view of Ogi *et al.* (US

5,419,197). Reversal of this rejection is requested for at least the following reasons. Claims 8-9, 12-14 and 16-19 depend from independent claim 1, and Ogi *et al.* does not remedy the aforementioned deficiencies with respect to Hays *et al.* and Grimm *et al.* Ogi *et al.* relates to a monitoring diagnostic apparatus for monitoring abnormalities or determining/predicting causes of abnormalities of electrical equipment such as circuit breakers, switches, disconnecting switches, voltage transformers, current transformers, general transformers, bus bars, insulation meters, generators, rotary machines, oil-insulated electrical equipment, air-insulated electrical equipment, vacuum-insulated electrical equipment and solid-insulated electrical equipment. However, like the primary and secondary documents, Ogi *et al.* does not teach or suggest the motor drive as recited in appellants' claimed invention. Accordingly, this rejection should be reversed.

C. Rejection of Claims 20-30 and 35 Under 35 U.S.C. §103(a)

Claims 20-30 and 35 stand rejected under 35 U.S.C. §103(a) as being obvious over Hays *et al.* and Grim *et al.* and further in view of Petsche *et al.* (US 5,640,103). This rejection should be reversed for at least the following reasons. Claims 20-30 and 35 depend from independent claim 1 and 32 respectively, and Petsche *et al.* fails to make up for the aforementioned deficiencies with respect to Hays *et al.* and Grimm *et al.* with respect to the respective independent claims. The tertiary document relates to a system for monitoring an electric induction motor and for indicating whether the motor is functioning properly or that it contains an internal fault that will lead to mechanical breakdown. Petsche *et al.* does not teach or suggest a motor drive that drives a motor in response to a control signal conveyed from a controller disposed within a diagnostics and control system. Accordingly, reversal of this rejection is respectfully requested.

D. Rejection of Claim 48 Under 35 U.S.C. §103(a)

Claim 48 stands rejected under 35 U.S.C. §103(a) as being obvious over Hays *et al.* and Grimm *et al.* and further in view of Gotou *et al.* (US 4,933,834). Reversal of this rejection is requested for at least the following reasons. Claim 48 depends from independent claim 41, and Gotou *et al.* does not cure the aforementioned deficiencies with respect to the primary and secondary documents. Gotou *et al.* relates to a control

system for a motor. However the cited tertiary document does not provide a motor drive that drives a motor in response to a health assessment signal from a controller situated within a diagnostics and control system. Accordingly, this rejection should be reversed.

E. Conclusion

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited references. Accordingly, it is respectfully requested that the rejections of claims 1-37, 41-43, 45-49, 53-55, and 57-59 be reversed.

If any additional fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [ALBRP112USA].

Respectfully submitted,
AMIN & TUROCY, LLP

Carlos P. Garritano
Reg. No. 58,041

AMIN & TUROCY, LLP
24th Floor, National City Center
1900 East 9th Street
Telephone: (216) 696-8730
Facsimile: (216) 696-8731

VIII. Claims Appendix (37 C.F.R. §41.37(c)(1)(viii))

1. A diagnostics and control system for controlling a motorized system and diagnosing the health thereof, comprising:

a controller that conveys a control signal to a motor drive to operate the motorized system in a controlled fashion; and

a diagnostics system integrated with the controller and the motor drive to comprise a single unit that diagnoses the health of the motorized system according to a measured attribute associated with the motorized system, the diagnostics system providing a diagnostic signal to the controller.

2. The diagnostics and control system of claim 1, the measured attribute comprises at least one of vibration, pressure, current, speed, and temperature.

3. The diagnostics and control system of claim 1, the motorized system comprises a motor and a load, the load comprises at least one of a valve, a pump, a conveyor roller, a fan, a compressor, and a gearbox.

4. The diagnostics and control system of claim 1, the diagnostics system provides a diagnostics signal according to the health of the motorized system, and the controller provides a control signal to the motorized system according to at least one of a setpoint and the diagnostics signal.

5. The diagnostics and control system of claim 1, the measured attribute comprises at least one vibration signal obtained from a sensor associated with a motor in the motorized system.

6. The diagnostics and control system of claim 5, the diagnostics system diagnoses the health of at least one of a motor bearing, motor shaft alignment, and motor mounting according to the measured vibration.

7. The diagnostics and control system of claim 6, the diagnostics system performs frequency spectral analysis of the vibration signal.

8. The diagnostics and control system of claim 7, the diagnostics system comprises at least one of a neural network and an expert system, the diagnostics system provides a diagnostics signal indicative of the health of the motorized system according to frequency spectral analysis of the measured vibration signal using the at least one of a neural network and an expert system.

9. The diagnostics and control system of claim 8, the controller provides a control signal to the motorized system according to at least one of a setpoint and the diagnostics signal.

10. The diagnostics and control system of claim 1, the motorized system comprises a motorized pump, the measured attribute comprises at least one vibration signal obtained from a sensor associated with the pump, and the diagnostics system diagnoses the health of the pump according to the measured vibration.

11. The diagnostics and control system of claim 10, the diagnostics system performs frequency spectral analysis of the vibration signal.

12. The diagnostics and control system of claim 11, the diagnostics system comprises at least one of a neural network and an expert system, and the diagnostics system provides a diagnostics signal indicative of the health of the pump according to frequency spectral analysis of the measured vibration signal using the at least one of a neural network and an expert system.

13. The diagnostics and control system of claim 12, the controller provides a control signal to the motorized system according to at least one of a setpoint and the diagnostics signal.

14. The diagnostics and control system of claim 12, the diagnostics system employs data fusion techniques in order to derive the at least one vibration signal from at least one sensor associated with the motorized system.

15. The diagnostics and control system of claim 1, the motorized system comprises a motorized pump, the measured attribute comprises a current associated with a motor in the motorized system, and the diagnostics system provides a diagnostics signal indicative of pump cavitation according to the measured current.

16. The diagnostics and control system of claim 15, the diagnostics system comprises a neural network that synthesizes a change in condition signal from the measured current.

17. The diagnostics and control system of claim 16, wherein the diagnostics system comprises:

a preprocessing portion operatively coupled to the neural network, the preprocessing portion conditions the measured current prior to inputting the current into the neural network; and

a post processing portion operatively coupled to the neural network, the post processing portion determines whether the change in condition signal is due to a fault condition related to the motorized system.

18. The diagnostics and control system of claim 17, the post processing portion is a fuzzy rule based expert system.

19. The diagnostics and control system of claim 18, the diagnostics system detects at least one fault relating to the operation of the pump and at least one fault relating to the operation of the motor driving the pump according to the measured current.

20. The diagnostics and control system of claim 1, the diagnostics system obtains a space vector angular fluctuation from a current signal relating to operation of the motor, and analyzes the space vector angular fluctuation in order to detect at least one fault in the motorized system.

21. The diagnostics and control system of claim 20, the diagnostics system obtains a current signal associated with the motor, calculates a space vector from the current signal, determines a space vector angular fluctuation from the space vector, and analyzes the space vector angular fluctuation in order to detect the at least one fault associated with the motor.

22. The diagnostics and control system of claim 21, the diagnostics system samples first, second, and third phase current signals associated with the motorized system in order to obtain the current signal, calculates first, second, and third phase space vectors according to the first, second, and third phase current signals, respectively, and calculates the space vector by summing the first, second, and third phase space vectors, in order to calculate the space vector from the current signal.

23. The diagnostics and control system of claim 22, the diagnostics system performs a comparison of the space vector with a reference space vector, wherein the reference space vector is a function of a constant frequency and amplitude, and computes angular fluctuations in the space vector according to the comparison, in order to determine the space vector angular fluctuation.

24. The diagnostics and control system of claim 23, the diagnostics system computes a polynomial expansion of an arctangent function in order to compute angular fluctuations in the space vector.

25. The diagnostics and control system of claim 24, the diagnostics system performs frequency spectrum analysis of the space vector angular fluctuation in order to analyze the space vector angular fluctuation in order to detect at least one fault associated with the motorized system.

26. The diagnostics and control system of claim 25, the diagnostics system computes a frequency spectrum of the space vector angular fluctuation, and analyzes the amplitude of a first spectral component of the frequency spectrum at a first frequency in order to perform frequency spectrum analysis of the space vector angular fluctuation.

27. The diagnostics and control system of claim 26, the diagnostics system analyzes fluctuations in amplitude of the first spectral component in order to detect at least one fault associated with the motorized system.

28. The diagnostics and control system of claim 27, the first frequency is approximately twice the frequency of power applied to a motor in the motorized system.

29. The diagnostics and control system of claim 28, the diagnostics system utilizes a Goertzel algorithm to extract the amplitude of the first spectral component in order to analyze the amplitude of the first spectral component.

30. The diagnostics and control system of claim 29, the at least one fault comprises at least one of a stator fault, a rotor fault, and an imbalance in the power applied to the motor in the motorized system.

31. The diagnostics and control system of claim 1, the diagnostics system comprises at least one of a neural network, an expert system, and a data fusion component.

32. A method of controlling a motorized system and diagnosing the health thereof, comprising:

employing a motor drive to operate a motor in the motorized system in a controlled fashion;

utilizing a component integrated with a controller to diagnose the health of the motorized system according to a measured attribute associated with the motorized system, the motor drive, the controller and the component integrated with the controller form a single entity; and

generating a diagnostics signal communicated to the controller.

33. The method of claim 32, further comprising providing a diagnostics signal indicative of the health of the motorized system, wherein operating the motor comprises controlling the motor according to at least one of a setpoint and the diagnostics signal.

34. The method of claim 33, further comprising measuring an attribute associated with the motorized system, wherein providing the diagnostics signal comprises obtaining a frequency spectrum of the measured attribute and analyzing the frequency spectrum in order to detect at least one fault in the motorized system.

35. The method of claim 34, providing the diagnostics signal comprises computing a space vector angular fluctuation, obtaining a frequency spectrum of the space vector angular fluctuation, and analyzing the amplitude of a first spectral component of the frequency spectrum at a first frequency.

36. The method of claim 32, diagnosing the health of the motorized system according to a measured attribute associated with the motorized system comprises:

providing the measured attribute to at least one of a neural network, an expert system, and a data fusion component; and

providing a diagnostics signal indicative of the health of the motorized system from the at least one of a neural network, an expert system, and a data fusion component.

37. The method of claim 36, operating the motor comprises controlling the motor according to at least one of a setpoint and the diagnostics signal.

38-40. (Cancelled).

41. An integrated control and diagnostics system for a motor, the system comprising:

a diagnostics module to generate a health assessment signal indicative of the health of the motor; and

a controller integrated with the diagnostics module and coupled to a motor drive, the controller outputting a driving output based on the health assessment signal, the driving output is applied to the motor drive, the motor drive and the controller integrated with the diagnostics module form an indivisible unit.

42. The control and diagnostics system according to claim 41, the diagnostics module generates the health assessment signal at least partially based on the driving output produced by the controller.

43. The control and diagnostics system according to claim 41, the controller is associated with at least one controllable parameter, the parameter being controllable in response to the health assessment signal.

44. (Cancelled).

45. The control and diagnostics system according to claim 41, further including at least one sensor, the sensor generating a signal indicative of a parameter associated with the motor, the health assessment signal is based on the sensor signal.

46. The control and diagnostics system according to claim 45, the controller includes a velocity feedback loop and a torque feedback loop.

47. The control and diagnostics system according to claim 46, the velocity feedback loop generates a current reference signal in response to the sensor signal, and the torque feedback loop generates the driving output in response to the current reference signal.

48. The control and diagnostics system according to claim 47, the velocity feedback loop includes a P-I controller to generate the current reference signal.

49. The control and diagnostics system according to claim 45, the motor parameter is one of a group consisting of velocity and vibration.

50-52. (Cancelled).

53. The control and diagnostics system according to claim 41, the diagnostics module includes an ASIC that generates the health assessment signal based on a process constraint.

54. The control and diagnostics system according to claim 42, the health assessment signal is indicative of whether the motor is deviating from a normal operating characteristic.

55. The control and diagnostics systems according to claim 41, further comprising a coordination module coupled to a plurality of the control and diagnostics systems, the coordination module alters the driving output associated with one of the control and diagnostics systems based on the driving output of another one of the control and diagnostics systems.

56. (Cancelled).

57. An integrated control and diagnostics system, comprising:

means for controlling a motorized system utilizing a health assessment signal indicative of the health of the motorized system;

means for driving a motorized system based at least in part on input from the means for controlling; and

means for generating the health assessment signal, the means for generating integrated with the means for controlling and the means for driving to constitute a single unit.

58. A composite control and diagnostics system to control a motor, comprising:

means for effectuating movement of the motor;

means for controlling the means for effectuating movement in a controlled fashion based in part on a health assessment signal; and

means for formulating the health assessment signal, the means for effectuating movement, the means for controlling and the means for formulating the health assessment signal forming a single integrated unit.

59. An integrated control and diagnostics system, comprising:

means for diagnosing the health of a motorized system amalgamated to from a unitary whole with a means for controlling the motorized system and a means for driving the motorized system based in part on a control signal from the means for controlling, the means for diagnosing producing a diagnostic signal; and

means for communicating the diagnostic signal to the means for controlling.

IX. Evidence Appendix (37 C.F.R. §41.37(c)(1)(ix))

None.

X. Related Proceedings Appendix (37 C.F.R. §41.37(c)(1)(x))

None.